

REMARKS/ARGUMENTS

Claims 1-5, 7-13, 15-26 and 28 are pending in this application. By this Amendment, claims 1, 2, 5, 18, 21, 22 and 28 are amended, and claims 14 and 27 are canceled without prejudice or disclaimer. Support for the claims can be found throughout the specification, including the original claims and the drawings.

The Examiner and his Supervisor are thanked for the courtesies extended to Applicants' representative during the interview conducted on April 5, 2011. The substance of the interview, including any agreements reached, is reflected in the above amendments and the following remarks. Withdrawal of the rejections is thus respectfully requested.

I. Informalities

The Office Action objects to claims 1, 2, 5, 18, 21 and 22 due to informalities. It is respectfully submitted that the amendments to claims 1, 2, 5, 18, 21 and 22 are responsive to the Examiner's comments, and thus this objection should be withdrawn.

II. Rejection Under 35 U.S.C. §102(b)

The Office Action rejects claims 22 and 23 under 35 U.S.C. §102(b) over U.S. Patent No. 4,569,328 to Shukla et al. (hereinafter "Shukla"). The rejection is respectfully traversed.

Independent claim 22 is directed to a device that supplies mixed gas to gas burners having a housing, a plurality of burner assemblies provided in the housing and each having a burner

chamber that receives a mixture of fuel gas and air therein, and a glass plate positioned the housing.

The device includes a mixing tube assembly, including a mixing tube having a first end in communication with the burner chamber so as to supply fuel gas and air to the burner chamber, an air supply tube positioned at an outside of the mixing tube and coaxially with the mixing tube such that a concentric gap is formed between a first end of the air supply tube and a second end of the mixing tube in a radial direction, wherein a sectional area of the first end of the air supply tube is greater than or equal to a sectional area of the second end of the mixing tube, an air passage defined by the gap formed between the first end of the air supply tube and the second end of the mixing tube, wherein a pressure difference between the outside and an interior of the mixing tube draws air from outside of the mixing tube and within the housing into the mixing tube through the air passage, and a connecting member that connects the mixing tube and the air supply tube so as to form a single unit.

The device also includes a gas nozzle spaced a predetermined distance apart from the mixing tube so as to spray gas toward the mixing tube, and a fan that blows air into the air supply tube.

As discussed during the interview, Shukla neither discloses nor suggests all of the features recited in independent claim 22, or the claimed combination of features.

Shukla discloses in Figures 2 and 3 (referred to in the Office Action) a gas range 70

including multiple cooktops 72 (i.e., burners). Each of the cooktops 72 includes a perforated jet plate 76 positioned atop a ceramic tile burner 80. User manipulation of a knob 106 rotates a gas valve shaft 104 to selectively position a mixing valve 84 so that fuel gas from a gas supply line 108 and air from an air tube 94 are mixed by the valve 84 and flow through an air/gas feed duct 82 and into the tile burner 80 for combustion.

In Shukla's range 70, the air tube 94 (compared in the Office Action to the claimed air supply tube) is offset from the air/gas feed duct 82 (compared in the Office Action to the claimed mixing tube), with the mixing valve assembly 84 (compared in the Office Action to the claimed connecting member) positioned therebetween. Shukla neither discloses nor suggests an air supply tube positioned at an outside of the mixing tube and coaxially with the mixing tube, as recited in independent claim 22, let alone in a manner such that a concentric gap is formed between a first end of the air supply tube and a second end of the mixing tube in a radial direction, as recited in independent claim 22. Further, Shukla necessarily neither discloses nor suggests an air passage defined by such a concentric gap, as recited in independent claim 22.

Additionally, Shukla neither discloses nor suggests that a sectional area of the first end of the air tube 94 is greater than a sectional area of the second end of the air/gas feed duct 82. Rather, in cross sectional views shown in Figures 1 and 3 of Shukla, it appears that the sectional area of the air tube 94 may be less than the sectional area of the air/gas feed tube 82. Thus, Shukla neither discloses nor suggests such features.

The Office Action combines Shukla with U.S. Patent No. 2,494,243 to L.D. Houlis (hereinafter "Houlis") in a later rejection, asserting that Houlis may overcome some of these deficiencies of Shukla. As discussed during the interview, Houlis fails to overcome these deficiencies of Shukla.

Houlis discloses a dial burner installation including a pipe 4 having a first end fitted to a burner tube 1 to supply a gas/air mixture thereto. A second end of the pipe 4 is fitted in a T-fitting 7, which serves as a junction between a gas source supply pipe 60 that supplies gas to the pipe 4 and a tubular discharge outlet 54 of a fan chamber 52 that supplies air to the pipe 4. A cap 10 is positioned on the end of the T-fitting 7 opposite the pipe 4, and an end of the discharge outlet 54 is fitted in an opening 13 in the cap 10. A housing 16 is fitted in the top end of the T-fitting 7, with a supply pipe 15 that receives gas from the supply pipe 60 fitted in the housing 18. Gas is directed from the supply pipe 15, through a chamber 18 in the housing 16 and a conical jet opening 21/22, where it changes direction and is forced into a venture sleeve 5/passage 6 in the pipe 4. Air is forced through the outlet 54, past the bottom end of the housing 16 within the T-fitting 7, and into the passage 6, where it mixes with the gas. The gas/air mixture mixed in the pipe 4 flows into the burner tube 1 for burning.

In the arrangement disclosed by Houlis, the discharge outlet 54 (compared in the Office Action to the claimed air supply tube) is inserted in the opening 13 in the cap 10 installed on the end of the T-fitting 7, which is in turn fitted to the end of the pipe 4 (compared in the Office Action to the claimed mixing tube). The Office Action asserts that the gap shown between

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Houlis' cap 10 and the corresponding end of the T-fitting 7 is comparable to the claimed air passage. However, even if the T-fitting 7 is considered part of the pipe 4, and part of a mixing tube as claimed, the gap between the cap 10 and the T-fitting 7 is formed in a longitudinal direction, and not in a radial direction. Thus, like Shukla, Houlis neither discloses nor suggests that a concentric gap is formed between a first end of the air supply tube and a second end of the mixing tube in a radial direction, as recited in independent claim 22. Further, Shukla necessarily neither discloses nor suggests an air passage defined by such a gap, as recited in independent claim 22.

Additionally, as shown in, for example, Figures 1 and 6 of Houlis and discussed during the interview, a sectional area of the air discharge outlet 54 is less than a sectional area of the end of the T-fitting 7 and/or the end of the pipe 4. Thus, like Shukla, Houlis neither discloses nor suggests that a sectional area of the first end of the air supply tube is greater than a sectional area of the second end of the mixing tube, as recited in independent claim 22.

Accordingly, it is respectfully submitted that independent claim 22 is allowable over Shukla, even in combination with Houlis, and thus this rejection of independent claim 22 should be withdrawn. Dependent claim 23 is allowable over Shukla, even in combination with Houlis, at least for the reasons set forth above with respect to independent claim 22, from which it depends, as well as for its added features.

III. Rejections Under 35 U.S.C. §103(a)

The Office Action rejects claims 1-5, 7-11, 13-15, 17-21, 24 and 28 under 35 U.S.C.

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§103(a) over Shukla in view of Houlis. Claim 14 has been cancelled. The rejection, in so far as it applies to claims 1-5, 7-11, 13, 15, 17-21, 24 and 28, is respectfully traversed.

Independent claim 1 is directed to a device that supplies mixed gas to radiant heating type gas burners having a housing, a plurality of burner assemblies in the housing for combustion of the mixed gas therein, each of the plurality of burner assemblies having a burner chamber that receives a mixture of fuel gas and air therein, and a glass plate placed on top of the housing. The device includes a plurality of mixing tubes respectively in communication with the plurality of burner chambers for supplying the fuel gas and air thereto, a plurality of gas nozzles for respectively spraying the fuel gas into the plurality of mixing tubes, a plurality of air supply tubes for respectively directing air toward the plurality of mixing tubes, wherein a first end of each of the plurality of mixing tubes is coupled to a corresponding burner chamber and a first end of each of the plurality of air supply tubes is coaxially aligned with a second end of a corresponding mixing tube, with a predetermined gap formed therebetween, wherein a sectional area of the first end of each air supply tube, facing the second end of the respective mixing tube, is greater than a sectional area of the second end of the respective mixing tube, a plurality of air passages defined by the predetermined gaps formed between the air supply tubes and the mixing tubes, wherein air outside of the plurality of mixing tubes and within the housing is drawn through the plurality of air passages and into the plurality of mixing tubes by a pressure difference between the

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outside and inside of the plurality of mixing tubes, and at least one fan in communication with a second end of at least one of the plurality of air supply tubes for supplying air thereto.

Independent claims 18 and 21 recite similar features in varying scope.

As set forth above and as discussed during the interview, Shukla, either alone or in combination with Houlis, neither discloses nor suggests all of the features recited in independent claims 1, 18 and 21, or the respective claimed combinations of features.

Accordingly, it is respectfully submitted that independent claims 1, 18 and 21 are allowable over the applied combination, and thus the rejection of independent claims 1, 18 and 21 under 35 U.S.C. §103(a) over Shukla and Houlis should be withdrawn. Dependent claims 2-5, 7-11, 13, 15 and 17-21 are allowable over Shukla and Houlis at least for the reasons set forth above with respect to independent claims 1 and 18, from which they respectively depend, as well as for their added features. Similarly, dependent claims 24 and 28 are allowable over Shukla and Houlis at least for the reasons set forth above with respect to independent claim 22, from which they depend, as well as for their added features.

The Office Action rejects claim 25 under 35 U.S.C. §103(a) over Shukla in view of U.S. Patent No. 5,193,273 to Riehl (hereinafter "Riehl"); rejects claims 11 and 12 under 35 U.S.C. §103(a) over Shukla and Houlis in view of Riehl; rejects claims 26 and 27 under 35 U.S.C. §103(a) over Shukla; and rejects claim 16 under 35 U.S.C. §103(a) over Shukla in view of U.S. Patent No. 5,425,353 to Herbert (hereinafter "Herbert"). Claim 27 has been cancelled. These rejections, in so far as they apply to claims 11, 12, 16, 25 and 26, are respectfully traversed.

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Dependent claims 11, 12, 16, 25 and 26 are allowable over Shukla, either alone or in combination with Houlis, at least for the reasons set forth above with respect to independent claims 1 and 22, from which they respectively depend, as well as for their added features. Further, Riehl is merely cited as allegedly teaching symmetric members forming a single unit, and Herbert is merely cited as allegedly teaching a variable speed motor. Thus, Riehl and Herbert, either alone or in combination, fail to overcome the deficiencies of Shukla and Houlis. Accordingly, it is respectfully submitted that claims 11, 12, 16, 25 and 26 are allowable over the respective applied combinations, and thus the rejections should be withdrawn.

IV. Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned, **Joanna K. Mason**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this,

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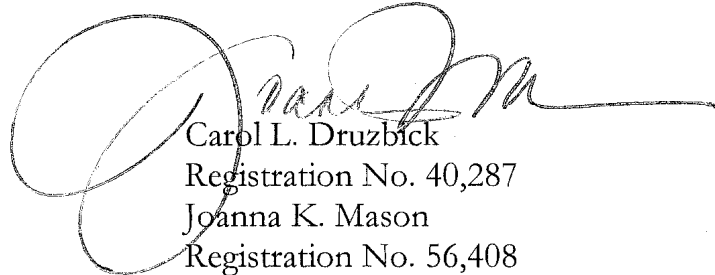
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concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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Date: April 13, 2011

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